

STRATEGY
RESEARCH
PROJECT

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**FACILITIES FOOTPRINT FOR THE ARMY OF THE FUTURE
WHAT CAN THE U.S. AFFORD?**

BY

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USAWC STRATEGY RESEARCH PROJECT

**Facilities Footprint for the Army of the Future
What Can the U.S. Afford?**

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Nancy W. Guilliams

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Project Advisor

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ABSTRACT

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WHAT CAN THE U.S. AFFORD?

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The thesis of this study is that the Army has not reduced its facilities base commensurate with force structure requirements and funding levels. Despite several major initiatives (World War II Wood Facilities Reduction Program, multiple rounds of Base Closure and Realignment (BRAC)), this analysis will demonstrate these initiatives have not yielded the desired reductions necessary to reach an affordable and sustainable facilities footprint for the future.

The study is an analysis of the data from the corporate Army systems (force structure, inventory, criteria and requirements), and processes (programming of new construction and maintenance and repair). The study concludes that the Army must develop an Installation Architecture for The Army After Next which significantly reduces the overall footprint. Only in this way can it sustain the level and quality of Army facilities appropriate for the future force and avoid a head on collision with obsolescence.

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Introduction

During the past decade, the Army's force structure and potential missions have changed dramatically. During the cold war the Army had to prepare for potentially massive engagements against known adversaries on well defined real estate. With a fairly well defined enemy, our supporting infrastructure was easier to determine and justify. Now, we have more ambiguity in warning time, the adversary and potential territories for engagement. We must maintain decisive forces, weapons platforms and a flexible response capability for numerous undefined worldwide events, to include military operations other than war. To do this, the Army must retain its position as a world class military power.

Currently, there is a popular perception that the end of the cold war has presented the nation with an opportunity for a "peace dividend". Familiar topics such as roles and missions, downsizing, doing more with less, process re-engineering, and outsourcing non-core functions are now fashionable for speeches and white papers. How will we maintain the status of a world class Army and also contribute to the Nation's demand for less financial outlays?

While numerous cost saving measures have been taken, there are continuing demands to reduce the Nation's defense outlays even more. Behind the rhetoric, maintaining a high quality, world power Army while simultaneously yielding a peace dividend has been a financially difficult juggling act.

If we are to retain nearly the same size forces as we have today, introduce new equipment with its corresponding support requirements and continue to require increasingly larger training areas, the Army will need a commensurate level of investment in its facilities infrastructure. We also cannot expect to attract and retain high caliber people with inadequate working and living facilities. Nor can the Army adequately maintain sophisticated weapons systems and warfighting equipment without proper facilities. However, facility expenses are high visibility targets in the search for peace dividend savings.

Study Goal. The goal of this study is to recap the downsizing efforts to date and determine if the Army has the necessary investment programs in place to maintain, modernize and replace its remaining facilities to ensure quality installations for the future.

Study Approach. The study will first examine a major driver of facility requirements - the Army's force structure. Next, a

brief survey of the Army's facility profile will be outlined, to include recent reductions and programmed capital investments. The study will then examine facility maintenance strategies and programs. These include capital investments, special funding programs and maintenance and repair funding strategies.

Against this backdrop, the final phase of the study is an analysis of the facilities remaining after the Army's four rounds of Base Realignment and Closure (BRAC). This analysis will focus on the effectiveness of current capital investment and maintenance programs to keep up with replacement and maintenance of those facilities. The analysis will conclude with alternatives and actions that should be considered to improve the effectiveness of the Army facility program.

Facts

The following section presents findings from numerous research sources. This study relies heavily on an analysis of current Army corporate data. Where appropriate, research sources are identified in the endnotes to this paper. As a start point, the initial research focused on past, present and future projections in four key data areas - the size of the force, facility footprint, capital investments and facility maintenance and repair funding.

Force Structure Profile - *Recapping a decade of downsizing.*

There is not a direct linear relationship between force structure and facility sizing. However, the size of the force along with its mission and equipment can be used to establish an order of magnitude baseline for facility requirements.

The total force is made up of three major components: active duty, reserves (includes Army Reserve Component and National Guard), and civilians. Force structure adjustments have been drastic in all three areas in the eight year period from FY89 to FY97. The total force has been reduced by almost 620,000 personnel, down from 1.9 million people in 1989. The following table summarizes the Army's drawdown over the past 8 years:

End Strength Totals from Army Budget Books¹

	1989	1997	Reduction	%
AC End Strength	770K	495k	275k	-36%
RC Total	776K	582K	194k	-25%
NG	457K	367k	90k	
AR	319K	215k	104k	
US CIV	402K	252k	150k	-37%
TOTAL	1,948	1,329	619k	-32%

____Despite the natural inclination to focus on the active force reduction from 770K to 495K soldiers, many installations must also support the other components as well. In addition to the mission of the active force, they provide working space for its civilian force, as well as work, food service, billeting and training for the reserve force. Thus, when active duty missions cease at a particular installation, reserve forces training missions may continue at that same base.

____A macro view of the data in the above table reflects a dramatic change for all components. The drawdown resulted in a one third reduction of the Active Force, one quarter reduction of Reserves and National Guard, and one third of the civilians. Thus, from a total force structure perspective, the baseline for

facility requirements, has been reduced by one third in the past eight years.

Real Property Inventory - A survey of reductions in the

Army facilities footprint. Army facilities inventory data is reported and measured in terms of the square feet of owned and leased buildings, commonly referred to as the facilities footprint. Building square footage accounts for over 80% of the Army's real property inventory. Therefore it provides an appropriate surrogate measure for other non building property such as roads, hardstands, fuel storage etc. In 1989, prior to the force structure drawdowns, the Army owned over a billion square feet of facilities world wide². Two programs have contributed to most of the reductions - Base Realignment and Closure and the Facility Reduction Program (FRP).

Today, by closing and realigning bases in the U.S. and overseas, the Army is in the process of reducing its facility footprint by nearly 330 million square feet. A total of 112 locations are being closed for active duty missions in the US and 662 separate locations OCONUS will be closed completely³. While this sweeping Base Realignment and Closure (BRAC) Program shrunk the installation footprint, the Army strategy changed

dramatically from a forward based posture to relying upon a CONUS based power projection force.

BRAC Overseas. The Army's power projection capability faces additional challenges in force projection with the significant closures of locations overseas. A distribution of OCONUS closures, by country, is shown in the following display:

Distribution of 664 OCONUS BASE CLOSURE SITES⁴

Belgium	France	Germany	Greece	Italy	Korea	N'Lands	Panama	Turkey	UK
3	21	573	4	4	29	6	13	6	5

Most of the OCONUS closures have been completed. In terms of square feet, the OCONUS reduction equates to nearly 205 million square feet - almost 2/3 of the total reductions. Many of these overseas closure sites were relatively small, making it difficult to appreciate the magnitude of the total closure effort. To place this reduction in perspective, a comparison of overseas closures can be made with more familiar major CONUS posts. For example, to duplicate the same magnitude of this reduction stateside, the Army would have to close these 12 major installations; Forts Bragg, Benning, Bliss, Campbell, Carson,

Gordon, Hood, Lewis, Leonard Wood, Meade, Stewart and Redstone Arsenal.

Stateside. The four rounds of Base Closure in CONUS and the 1990 SECDEF Announcement have resulted in 112 installation closure actions, producing the following reductions:

CONUS Base Closure Reductions⁵

CONUS	BRAC 88	Announcement	BRAC91	BRAC93	BRAC95	TOTAL
BLDG SF	24,088128	19,396359	28,514,558	7,647,539	60,158,127	139,804,921
AFH units	2,992	64	6,469	490	4,144	14,159
UPH units	2,562	1	24,804	441	9,817	37,625
ACRES	125,976	63,029	39,507	3,162	75,001	305,775

AFH - Army Family Housing UPH - Unaccompanied Personnel Housing

Although approximately half of the closures were small installations like stand alone housing sites, the remainder included significant properties like Forts Ord, McClellan and Sheridan. All but 23 of the announced closure actions have been completed. In total, this results in a reduction of approximately 140 million square feet in CONUS.

Facility Reduction Program. The Facilities Reduction Program (FRP), though neither publicized nor recognized as much as BRAC, has made an important contribution by demolishing some of the Army's oldest inventory. In 1989 the Army still owned about 98 million square feet of temporary World War II Wood facilities.

Because of this program's increasing emphasis during FY89 to FY96, approximately 36 million square feet of buildings were demolished⁶. Current plans are to continue demolition of excess facilities on a much greater scale early into the next century.

In summary, there has been a significant reduction in the Army's facility footprint from 1.2 billion square feet of inventory in FY 89 to less than 900 million square feet today. Even when the new construction required by BRAC realignments is included, the planned demolition of remaining World War II facilities causes the inventory to drop below 800 million square feet by FY 03⁷. This net reduction of 330 million square feet of inventory amounts to approximately a one-third reduction in facilities, which, on the surface would appear somewhat in line with the one-third reduction in Army end strength.

The Infrastructure Reduction Program (IRP) This program is another initiative that further reduces the inventory by 60 million square feet of facilities through demolition. The program calls for demolition at a rate of 10 million square feet per year throughout the Five Year Defense Plan (FYDP). Long term, the goal is to eliminate over 150 million square feet of buildings. However, many of these facilities are still in use. Although the Army has committed \$100M a year FY98-03 to pay for

demolition costs, the success of this effort depends on effective consolidation and utilization into existing permanent facilities with minimal renovation or displacement of activities to leased facilities.

The following chart provides a summary of all ongoing facility reductions:

Summary of Army reductions by 2003 (BRAC, FRP, IRP)

	1989**	2003	Reduction	%
# bases CONUS	205	93	112	
# bases OCONUS**	756	92	664	
Total # bases	961	185	776	-81%
SF CONUS	749	575	174 MSF*	
SF OCONUS	410	205	205 MSF	
Total SF	1,159	780	370 MSF	-27%

*CONUS SF reductions include: (36MSF FRP, 60MSF IRP, 114MSF BRAC

(excludes DLA and RC reductions from BRAC totals chart page 8). End state also reflects 36MSF of additive new construction.

** Include bases as well as other separate locations

Facility Maintenance and Capital Investment Profile.

Concurrent with reducing force structure and total facilities, the past decade also resulted in major reductions in capital investments, maintenance and repair funding.

Resources for the maintenance, repair and replacement of active component facilities come from primarily two appropriations: Real Property Maintenance (RPM) accounts within the Operations and Maintenance Appropriation (OMA), and Military Construction Army (MCA). RPM funds are allocated to the Major commands (MACOMs). The MACOMs in turn distribute these funds to their installations for upkeep and repair of facilities. Capital investments, which encompass new construction and major renovations, are programmed through the MCA appropriation which is centrally managed at HQDA.

Real Property Maintenance. Currently there are two major components of the Army's RPM program. The first is routine maintenance and repair and minor construction. The Army requirement calculation for funding normal maintenance is \$4 per facility square foot⁸. The second part of RPM is a more focused investment program which includes a barracks upgrade program, utilities modernization, energy conservation, environmental projects, demolition and caretaker costs for excess facilities.

A review of the actual Army budget for FY98 indicates that only 68% of the Army's total RPM requirement was funded.⁹ Moreover, after subtracting funding for the special investment program, only 42% of the original routine maintenance requirement is funded.

Even though funding is well below the requirement, during the year of execution, RPM funds are often reduced even further. Historically, OMA accounts have been used as the "cash cow" by Congress, OSD, and HQDA to pay for unforeseen events such as Desert Storm, Bosnia, etc. Also, the Army, has routinely reduced the OMA account to pay for unprogrammed or out-of-cycle leadership initiatives. These habitual decrements have further decreased the RPM buying power.

It should be noted that the types of expenses paid out of the RPM account are generally not discretionary, that is, they are mostly "must fund" life support bills. These unprogrammed reductions to the maintenance accounts at the Departmental level create a corresponding, trickle down reduction in operations and maintenance funding at the installation level (OPTEMPO, BASOPS, and RPM). Researching the recent history of funds migration within the OMA account suggests there is no excess to be taken from facility maintenance and other installation management

accounts. Over the past six years, \$3.6 billion in other OMA accounts (primarily OPTEMPO) had to be moved into the Base Operations accounts¹⁰ to cover shortfalls in installation facilities bills for utilities, health, safety and other life support expenses. In summary, while the Army recognizes the cost of adequate facility maintenance, the reality of fiscal constraints have resulted in an actual funding level of less than half (48%) of that required.

Military Construction Army (MCA). Facility Capital investment funding (new construction and major renovation) in the FY97 Army Military Construction Program also experienced a precipitous decline from \$1.1 billion in FY89 to \$556 million, in FY97.¹¹ Barracks and strategic mobility enhancements encompass almost all the available funding.

In addition to new construction and major renovation financed by MCA, there are BRAC projects totaling \$1.7 billion for construction, modification and renovation.¹² From FY 89-95, BRAC construction essentially became the primary source of new facilities as the MCA Program was cut in half. However, by law, this funding cannot be applied to relieve existing deficits or to replace facilities that are simply worn out or obsolete. These funds are only available to fund facilities necessary to

implement BRAC relocations in accordance with the law. In summary, although force structure and the facilities footprint have been reduced by one-third, funding has been so unpredictable that even the reduced resource requirement for facilities has not been adequately funded.

Analysis

After reviewing the Army's current profile of forces, real property inventory, capital investment and facility maintenance, we are left to examine two questions. First, has the post cold war reduction in facilities paid off for the Army in terms of savings? Second, do we have the programs and funding strategy in place to maintain and replace facilities for the Army of the future?

Anticipated Versus Actual Savings. Many anticipated that the reduction of force structure would result in a major contribution in the "peace dividend" by producing commensurate savings in the requirement to maintain facilities. However, the Army has not actually realized the facilities savings initially hoped for when DOD first sought legislation to institute BRAC. Normally, savings do not come immediately and rarely materialize for a number of years until the bases are closed and property is transferred. In fact, Army wide, there is a large initial cost for these closures of \$5.2 billion. Approximately 40% of that amount is to pay for environmental restoration at closing sites. Another 32% (\$1.7 billion) is for construction or modification of

facilities at gaining locations. The remaining 28% pays for equipment and personnel relocation.¹³

Second, a number of BRAC decisions to close a base for "active missions" were not complete installation closures. Since Reserves training on active Army installations still need a place to train when those installations discontinue their Active Army mission, significant portions of eight installations (23 million square feet of facilities¹⁴) will transfer to the reserves. Thus, there is little net reduction in facilities footprint or cost to the Army.

Lastly, even without the Reserves or National Guard assuming active army posts, base closure was not synonymous with disposal of all facilities. Some facilities, like ammunition plants, must go into a layaway status to support mobilization requirements. Facilities placed in this status, however, do save on operations and maintenance costs since the average cost to minimally maintain layaway facilities is only a small fraction¹⁵ of the cost for normal, active facilities.

Despite the up front cost, the retention of property for reserve components, the continuing caretaker expenses associated with mobilization layaways, and the delay in realizing savings, the four rounds of base closures will reduce the Army's annual

operating cost by \$1 billion. This amortizes closure expenses in just over five years, with savings finally beginning to accrue in the sixth year¹⁶. Hence, BRAC does not provide a pay off for the post cold war Army.

In order to provide a comprehensive answer to the question of whether the Army has programs and a funding strategy in place, it is first necessary to assess the quantity, age, and quality of the existing facilities inventory.

Facility Excesses and Deficits. As for the right type and number of facilities, there are both excesses and deficits. To support the force as currently structured through FY03, the Army estimates its capital investment construction requirement, excluding BRAC related construction, to be \$21.2B in CONUS and \$13.5B OCONUS¹⁷. Yet at the same time we have excess facilities. That is, we do not have the right number and type of facilities, located in the right place to meet current or documented future mission requirements. Small pockets of excess facilities as well as over subscribed facilities exist at many installations throughout the Army.

Years of incremental decisions regarding realignments from Europe to CONUS, BRAC and downsizing are the part of the answer of how we have ended up with both. One example of how these

pockets are created is the BRAC 91 decision to move the 5th Mechanized Division (now the 2d Armor Division) from Ft Polk to Ft Hood. This action resulted in numerous excess facilities, to include family housing facilities at Ft Polk. Even after realigning the Joint Readiness Training Center (JRTC) to Ft Polk, the supported population now at Ft Polk remains five thousand soldiers less than before BRAC 91. Consequently, Ft Polk is underutilized and continues to have large excesses of facilities while Fort Bragg and Fort Hood are oversubscribed and in a deficit condition. Simply offsetting the requirement with an installation that has excess space is not acceptable. For reasons of training effectiveness, unit cohesion and span of control, it is clearly sub-optimal to fragment an organization's assigned units among different installations. For these reasons, Army leadership in the force stationing arena have consistently opposed optimizing facility utilization at the expense of keeping related units together.

Inefficient or Obsolete Facilities - a diminishing return on investment. Older facilities are not efficient in terms of useable square feet and yet, because of their age, they cost more to maintain. The normal planning factor of net to gross useable square footage is 80%. In older buildings this factor is reduced

to 60%¹⁸ because when excess facilities of one type (such as barracks) are converted to alternative uses, not all of the available square footage can be effectively utilized. When using older wooden barracks for administrative offices, heavy safes, file cabinets and computer equipment can only be placed along outside walls which limits effective and efficient use of the space. Hospital buildings can also be converted to administrative use. However, the wide hallways, typical of hospital construction, reduce the net useable square footage which can actually be used for office space.

Capital Investment Program. The \$1.7 billion BRAC construction, modification and renovation program (which equates to at least 3 years of MCA programs) is far and above the largest capital investment initiative in the Army facility program. Thus, approximately 60% of all of the Army's efforts in capital investment projects are being driven by downsizing, a shift to CONUS based power projection and the resulting BRAC actions, not by a strategy to revitalize or replace aging facilities. These projects are concentrated on new construction and major modifications for support of new missions and new populations resulting from force realignments.

Moreover the remaining 40% is also not focused on replacing or rejuvenating worn out, existing facilities. The bulk of the remaining program is concentrated in two specific areas - barracks and strategic mobility enhancements. The barracks effort is driven by quality of life issues for single soldiers and strategic mobility enhancements are driven by the shift to a CONUS based power projection Army. In summary, the Army essentially does not have a capital investment program for replacement and revitalization of facilities that are nearing the end of their useful life.

The Army programs military construction for only two years in the future. The FY 98 program is \$500 million and the FY99 program is \$640 million.¹⁹ At a rate of roughly half a billion dollars per year, it will take 70 years just to catch up with today's near term (POM) shortfalls of \$34.7 billion²⁰, with replacement of aging facilities not part of those requirements.

From Army budgetary history and the current programs, one must accept the fact that the Army will not realistically keep up with its new and changing facility shortages. We will continue to have wide disparities between that which we label as deficit requirements and that for which we are willing to prioritize funding. Even if current new construction

requirements were affordable, can today's longer term (50+years) capital investment strategy keep up with a doctrine and force modernization strategy that changes drastically every 20 or so years? TRADOC has embarked on defining the strategy, organization and military art beyond 2010 for the "Army After Next", a highly mobile and lethal Army. Will this new doctrine mean we need to convert most of our wheel and track hard-stand space to larger helicopter parking with larger more sophisticated maintenance buildings? Is our current geographical force distribution compatible with the Army after next precept? The facility impacts of this new doctrine are yet to be determined.

This is tantamount to saying you simply can't afford everything - so what? The "so what" is the disturbing truth that the Army not only is unable to keep pace with changing requirements, but also does not have a systematic program to replace facilities nearing the end of their useful life.

Facility Useful Life - a different capital investment view.
In developing a systematic replacement program, the topic of useful life begs for a definition. One of the most debated topics among facility planners is the question of facility useful life. The views of useful life of a building in today's commercial construction industry versus the military view can be

significantly different. Part of the difference is attributed to the fact that many military facility design requirements are not typically required for civilian facilities. Even if the exact same building is constructed, the commercial view of useful life is significantly different. This is because the military's facility service life is based on the estimated number of years a facility can be expected to last in a "safe and serviceable" condition rather than the useful life of a facility as an economic commodity competing in the open market place. A general planning factor for a commercial building useful life is between 20-30 years, depending on its use. IRS depreciation rules seem to agree with these factors. During that period of time, major renovations for plumbing, electrical, heating, ventilation and air conditioning are anticipated every ten years.²¹ Funding constraints have prohibited the Army from adopting this practice, resulting in a schedule of "replace as needed", which loosely translates to replace when the mechanical, plumbing or electrical suddenly fail or the building is structurally failing.

The second disparity between useful life benchmarks for military versus commercial buildings is linked to facility investment strategies. These include, impact of allowable depreciation on the corporate tax posture and anticipated revenue

weighted against alternative uses of capital investment money. These concepts redefine the commercial definition of useful life to "useful investment life for maximizing capital investment dollars".

The government also uses alternative economic considerations in deciding to build facilities, but not alternative return on investment strategies. The Army is driven by meeting mission requirements and providing for the health, welfare and productivity of those supported versus monetary gains.

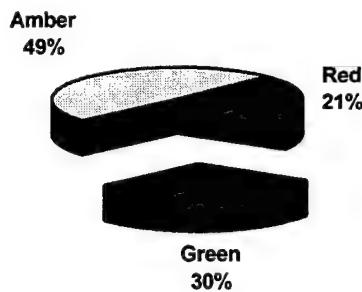
The service life for a government facility currently computes to about 57 years.²² However, at the current funding level, installations will have to keep the same facilities for 100 years!

The average age of most of the Army facilities inventory today is 40 years.²³ So, are we a good 17 years from major facility replacement problems? Not exactly, stated in another way, half of the Army's facilities are less than 40, half are more than 40. To gain better granularity of actual facility conditions it is necessary to examine the Installation Status Report (ISR).

ISR and Facility Conditions - 70% needs major rebuild. The new Army Installation Status Report (ISR) data confirms that the

Army's inventory of facilities is old and tired. The ISR uses "C" ratings, similar to the Unit Readiness Report, which are used to determine the overall adequacy of the Army's facilities to support current requirements. The "C" ratings are then aggregated into green, amber and red ratings which correspond generally to good, fair and poor conditions. The graphic results below are not encouraging.²⁴

70% of the inventory needs major rebuild/replacement



Facility degradation rates also play a major role in rebuild or replacement requirements. The degradation rate is a function of how the facility is used and how well it is maintained. Warehouses for example, do not deteriorate as rapidly as heavily used maintenance facilities, family housing and barracks deteriorate much more rapidly. It only takes a few years for heavily used facilities to move from amber (needs major renovation) to red (unsuitable without complete rehabilitation or

replacement) condition when regular maintenance and repair is not accomplished.

With continued underfunding, or at best minimal funding for maintenance and repair, and high rates of facility degradation, the Army could soon be facing a time when 70% of its infrastructure must be replaced.

Having determined that almost 70% of the inventory requires major renovation or replacement and there is no funding for a capital investment program of this magnitude, we are left with the final question. Is there a plan to maintain the existing inventory past its normal life until resources are available for replacement?

Maintenance and Repair Funding - a new distribution strategy. Although not spelled out in any official documents, the current Army strategy for facility maintenance appears to be 1) stretch scarce dollars by eliminating unneeded facilities, and 2) distribute facility maintenance funding based on the required facility footprint for permanent structures, not all those on hand at installations.

In past years, facility maintenance funding was based on a percentage of plant replacement value and on the backlog of maintenance projects submitted by the installation. In many cases

this strategy allocated funds to facilities no longer required. The realities of continued austere budgets has forced the Army to change the method of allocating limited maintenance and repair funds.

In the FY98-03 POM the Army is trying to stretch O&M funds and encourage consolidation wherever possible by funding only required facilities. Instead of allocating funds based on all existing facilities, or the MACOM's records for Backlog of Maintenance and Repair projects, the Army now allocates maintenance resources based only on the facilities required for a given installation to support its mission, population and equipment. By applying this new funds allocation strategy, approximately 134M SF were considered excess to the Army's requirement and not eligible for OMA resources. Funding only the required facilities means the field must consolidate into the best facilities and take steps to dispose of the worst of their aging inventory. Unfortunately, total Army funding supports only 42% of the required facilities, therefore we are not maintaining even the minimally required inventory.

Leasing Options - land and facilities. One option the Army has to handle shortages of facilities and new construction funding (MCA) is to lease building space and lease or "borrow"

public lands to use as training areas. Records²⁵ currently reveal 45.6 million square feet of commercially owned facilities in CONUS are leased at a cost of approximately \$300 million dollars annually. These leases are generally multi-year contracts, paid out of the OMA account which reduces available resources to other BASOPS accounts.

When deciding on leasing instead of ownership, the ownership option usually looks better on a purely dollars and cents basis. Aside from becoming locked in long term contracts, total lifetime cost are largely the reason the Army wishes to reduce the overall outlay for leases. Although there are other considerations involved in the equation, the basis for the government's determination of cost is by dividing the estimated construction and operational cost into the structure's useful life and comparing that amortized figure against the total annual cost of leasing a similar facility (if available in the market place) for the same number of years. Obviously, if commercial leasing fees are based on a shorter useful life (regardless of why) than used by the government, the longer term cost of ownership will look more attractive than leasing. Why then, under our own rules for comparing the two options, do we consider leasing? Number one, it is the color of the money and how it is appropriated. When we

lease, we pay the bill out of the OMA account, a different appropriation than our capital investment funds, all be it still part of the total DOD funding. Secondly, and probably at the crux of the decision, the Army simply can not generate all of the capital investment money it needs up front, regardless of the fact that by not owning, we will spend more over a 50-60 year leasing period. In certain circumstances where the Army has a short term requirement, leasing may be the best option. In view of current requirements, deteriorating facilities and lack of up front capital investment funding, reducing leases will be difficult.

Leases also are considered a "must fund" bill for the Army and as such receive priority funding. Army priorities are to fully fund all requirements by law or statute, utilities, leases, contracts, and then fund discretionary programs.

With regards to training land the story is somewhat different. The Army owns only 41% of the training land it uses today. The remaining 59% is "borrowed" for Army use from Public Domain Lands or through lease, license or permit.²⁶

Training land is a costly and mostly irreplaceable asset for the Army. Modern (high technology) weapons consistently require more training area and more land (see endnote 1). It is

disconcerting that the long term availability of even the land that is used today rests with multiple landlords who are driven by environmental, special interest and economic considerations rather than national defense preparedness.

The analysis therefore suggests that the Army does not have the programs and funding strategy in place to meet the facility needs of the future. This is particularly important since the post cold war facility reduction has not resulted in significant savings for the Army.

Army Facilities Downsizing - Where do we go from here?

A New Paradigm for Installations. A hard look into the past history of facilities funding and anticipated future budgets may well mean the Army must shift its "self contained city" approach for installations to a new paradigm. At the risk of suggesting the unthinkable, the Army must face reality by either raising facility funding, which is highly unlikely, or changing its lifestyle. Since the early frontier days, the Army has been a family oriented employer and has grown comfortable with a mini-city approach toward its soldier's place of work. In a fiscally unconstrained environment one would have to concede that this lifestyle has played a key role in attracting and retaining a historically underpaid force. However, the Army's neglectful funding of its facilities suggests that it may no longer be affordable to sustain its mini-cities with necessary resources, infrastructure and personnel.

Before the next Quadrennial Defense Review, it may be necessary to break the paradigm of installations as a place to live, and replace it with a model of installations as little more than workplaces. The only exceptions should be remotely located installations where civilian life support facilities are not readily available, or installations with high concentrations of

enlisted troops (Bragg, Stewart, etc.). While this is not a desirable change for the Army, to ignore affordability at this point in history is to accept an unfortunate role as the "slum landlord" of the future. What little funds are available for modernization of enduring installations must be focused on critical power projection installations, instead of less critical administrative posts. There is not enough funding to maintain the military "cities" of past years.

Admittedly, this would result in an initial loss of security and support benefits by the service member. However, a more integrated military and civilian community could greatly improve the general public's understanding of what our soldiers do for the country and the sacrifices that requires of them and their families.

Socialization between military members and the civilian population is more important than ever at this point in the Nation's history. With a smaller Army and without a draft, the younger civilian population and a majority of congressional members now serving do not have military experience.

The general public's understanding of the life of a soldier and the need to maintain a well trained and disciplined Army has diminished. Maintenance of a separate military "city" separates

the two cultures even further. To some, the facilities and services offered to soldiers is an extravagance which they believe they have no obligation to pay for. For example, the huge volume of in-house child care provided for military families. While some large companies have been forward thinking and generous enough to provide child care for its workers, the majority of them do not. Ostensibly they do not because of overhead cost and exposure to greater liability. While these facilities provide a necessary service to the soldier and their families, more aggressive partnerships with the commercial marketplace could ensure services are available locally at fair prices and thus alleviate the need for the military to build and maintain their own facilities. Additionally, other examples that contribute to the perception of the soldier's "special benefits" and serve to isolate them from his or her civilian community are: separate hospitals, golf courses, bowling alleys, and the list goes on.

As an Army wife for over twenty five years I have a vested interest in the Army culture. I understand how much the soldier and his family depends on the services and security of our military installations during frequent moves and deployments around the world. The suggestion of changing that lifestyle is

not one to be taken lightly. As a taxpayer and a civil servant, I am convinced we must recognize that our current "mini-city" lifestyle is no longer affordable or else we risk becoming the largest "slum lord" in the land.

Develop a Comprehensive Installation Strategy. Having dealt with the "far out of the box" change above, the next step would be to study carefully the remaining installation bases and develop a comprehensive strategy. Simply put, all the pieces of the Army facility program must fit with each other. This can only be achieved through a comprehensive total Army Installation Strategy. Incremental decisions and special focus programs can not continue. If the individual parts of the plan are to "come together," we must design them to fit our needs as well as our ability to fund them. The Army cannot afford to move into the future without a coherent and comprehensive strategy, and merely hope that its tired and aging installations can support, train, and deploy the Army of the future. Our capital investment strategy, maintenance strategy and alternative programs must all be complimentary and focused on how well each program fits in a systematic plan to reduce requirements, improve maintenance and repair and get a grip on the facility renewal and replacement problem.

Further Consolidation and Another BRAC. With the new installation paradigm and a good plan, the Army would profit from at least one more well thought out round of BRAC. In the divestiture plan, if training and force projection remain the number one priority, other Army functions, such as schools, administrative and special purpose installations must be consolidated. These consolidations must be part of a deliberate master plan where capability is not lost as the number of total installations is reduced.

Essential capabilities, land and facilities must be retained. From a power projection perspective, it is inadvisable to reduce the level of forward basing any further than we have. Also, the practice of leasing the majority of our training lands deserves serious reconsideration. Installations with space suitable for maneuver, range areas or other major training facilities space should be retained. Most training areas are already victims of increasing environmental restrictions and encroachment from civilian development, limiting the type and scale of training that can be accomplished. About a third of the training land has also been made available for oil and gas drilling which places another constraint on full utilization.

However, there is room for further consolidation of certain types of Army installations in CONUS such as those where the predominate use is administrative. These are the installations which are prime candidates to be merged with posts which must be maintained to support the major troop and training and mission of the Army. Other administrative activities must be moved to posts where there is available space, like Forts Polk and Riley. While no installation commander wishes to see his post closed, such consolidations would improve overall facility utilization of what the Army must retain and maintain.

Using the remaining installations as characterized in the table which follows, the Army must determine which major "cities" to keep and which can be consolidated or incorporated into the civilian community.

Active Army Installations by 2003²⁷

Installation type	CONUS	OCCONUS	TOTAL
Ammo Prod/	24	0	24
Ammo Storage	3	1	4
Schools	18	1	19
Commodities	8	0	8
Depot	5	9	14
Industrial	2	1	3
Administrative	12	38	50
Maneuver/troop	11	36	47
Proving Grounds	5	0	5
Major Training Areas	4	4	8
Ports	1	2	3
TOTAL	93	92	185

In summary, when you look at the types of installations remaining in CONUS, are we postured for where we want to be in 2010? I would submit we cannot afford to devote 30 of our 93 CONUS installations to administrative and school functions. These 30 installations, coupled with 27 devoted to Ammo strorage and production, account for 2/3 of all remaining CONUS installations.

The potential for Joint Service (Purple) bases must be thoroughly explored and executed wherever possible. If the Army has pockets of excess and shortages then it is likely that all four services have the same. Ft Bragg and adjoining Pope Airfield is one example where services are beginning to be combined and shared.

After consolidation, excess installations must be totally closed to provide significant savings. Partial closures and shifts to the reserve components do not yield the long term savings needed for maintenance and replacement at bases staying open.

Reduce Requirements Through Business Practice Changes.

Another strategy to reduce maintenance requirements is through changes to operational practices. Although the overall trend with training and equipment is to increase in size, some new practices may cut down on facility requirements. For example, "just in time logistics" should reduce the warehouse requirement for Army facilities. Other practices must include leveraging modern day electronic commerce and communications to decentralize non-deployable activities into the facilities where there are pockets of excesses, and "work at home" programs when they can be effectively administered.

Research and development for force modernization efforts should consider the impact on facilities during early development to mitigate deficits in maintenance space, equipment parking and training land requirements. The example here is the newer four bladed helicopters which reduced maintenance hanger capacity from two aircraft to one, immediately creating 50% shortfall in maintenance facilities.

Take a More Realistic Look at the Lease Reduction Program.

Through attrition resulting from force structure reductions and relocating to DOD owned facilities, the Army goal is to reduce lease costs by 30% over the POM. Since lease reductions free up OMA money which might become available for facility maintenance, the goal is in the right direction. However, unless the Army finds a way to accelerate capital investment for decaying facilities, the reality of the situation suggests that leases will increase, not decrease.

Privatization - incremental payments may be more affordable.

One way to gain an influx of capital as well as to reduce facility requirements is through privatization. This initiative is now being explored in many areas. While privatization fees will include the commercial industry's cost for facilities, the commercial activity generally has greater freedom to raise up

front capital needed to build and maintain modern facilities.

The government pays for the facilities plus a profit margin, but does so incrementally, over time. Although not always the case, there is hope that paying for profit, above cost, will be offset by the contractor's better efficiencies through greater economy to scale. One example, though perhaps a bit costly, is utilities privatization. Wherever the Army can privatize utilities they will not have to rebuild the old physical plant. Alternative Army Family Housing options are also being pursued at selected test sites. Contractor Supported Equipment maintenance, where the contractor owns the maintenance facilities is another example of shifting the facilities burden to an incremental payment concept.

Be Prepared to Pay What it Costs. The Army must develop comprehensive and consistently funded capital investment and maintenance and repair programs. There must be a program for systematic replacement, revitalization, maintenance and repair funding to sustain or replace required facilities. As shown in this research, current capital investment programs are not based on age or condition of facilities. Without a consistent and sustained program, facility maintenance dollars will not stretch as far and the point will soon be reached where most of our

facilities will become dysfunctional. There is indeed a cost for doing business in the future and the Army must be prepared to pay that cost for the long term health of its soldiers and its mission.

Endnotes

¹ The Army's budget books reflect authorized strength levels. Actual end strength is difficult to pinpoint but may be slightly different.

² Headquarters Integrated Facilities System (HQIFS), Data base of record for the Army's world wide real property inventory, Proponent: Headquarters Department of the Army, Assistant Chief of Staff for Installation Management (DAIM-FDP), Washington, DC, updated semi annually (Dec and June).

³ Headquarters, Department of the Army Chief of Staff for Installation Management, Base Closure and Realignment Office (DAIM-BO) information paper, Subject: Base Closure and Realignment and Closure (BRAC) Implementation (E-198), Jan 97.

⁴ Base Realignment and Closure (BRAC) Historical Data Base, Data base of record for the Army's Historical BRAC program. Proponent: Headquarters Department of the Army, Assistant Chief of Staff for Installation Management, Base Closure and Realignment Office (DAIM-BO), Washington, DC.

⁵ Base Realignment and Closure (BRAC) Historical Data Base, Data base of record for the Army's Historical BRAC program. Proponent: Headquarters Department of the Army, Assistant Chief of Staff for Installation Management, Base Closure and Realignment Office (DAIM-BO), Washington, DC.

⁶ Headquarters Integrated Facilities System (HQIFS), Data base of record for the Army's world wide real property inventory, Proponent: Headquarters Department of the Army, Assistant Chief of Staff for Installation Management (DAIM-FDP), Washington, DC, Updated semi annually (Dec and Jun).

⁷ Headquarters Integrated Facilities System (HQIFS), Data base of record for the Army's world wide real property inventory, Proponent: Headquarters Department of the Army, Assistant Chief of Staff for Installation Management (DAIM-FDP), Washington, DC, Updated semi annually Jun and Dec.

⁸ Headquarters, Department of the Army Chief of Staff for Installation Management, Resource Integration Analysis of Real Property Maintenance Cost Output from Army Installation Management-HQ Integration (AIM-HI) for POM 98-03.

⁹ Headquarters, Department of the Army Chief of Staff for Installation Management, Resource Integration Analysis of Real Property Maintenance Cost Output from Army Installation Management-HQ Integration (AIM-HI) for POM 98-03.

¹⁰ Army Budget Books reflect that from FY89-95, commands migrated a total of \$3.6B from OMA Operational Tempo (OPTEMPO) accounts to the OMA/ RPM accounts.

¹¹ The Construction Appropriations Programming, Control and Execution System (CAPCES), Army data base of record for construction programming and execution, Proponent: Headquarters, U.S. Army Corps Of Engineers (USACE), Washington, DC. Updated: with the four official budget positions annually.

¹² Headquarters, Department of the Army Chief of Staff for Installation Management, Base Closure and Realignment Office (DAIM-BO) information paper, Subject: Base Closure and Realignment and Closure (BRAC) Implementation (E-198), Jan 97.

¹³ Headquarters, Department of the Army Chief of Staff for Installation Management, Base Closure and Realignment Office (DAIM-BO) information paper, Subject: Base Closure and Realignment and Closure (BRAC) Implementation (E-198), Jan 97.

¹⁴ Base Realignment and Closure (BRAC) Historical Data Base, Data base of record for the Army's Historical BRAC program. Proponent: Headquarters Department of the Army, Assistant Chief of Staff for Installation Management, Base Closure and Realignment Office (DAIM-BO), Washington, DC.

¹⁵ Headquarters, Department of the Army, Assistant Chief of Staff for Installation Management, Plans and Operations Division (DAIM-FDP) Analysis of 1993 Construction Engineering Research Laboratory (CERL) Layaway. Analysis shows the average facility layaway maintenance cost per square foot is \$.41 versus \$4.00 SF for a normal active maintenance and repair.

¹⁶ Headquarters, Department of the Army Chief of Staff for Installation Management, Base Closure and Realignment Office (DAIM-BO) information paper, Subject: Base Closure and Realignment and Closure (BRAC) Implementation (E-198), Jan 97.

¹⁷ Headquarters Real Property Planning and Analysis System (HORPLANS), Data base of record for real property planning and analysis (calculates Army facility requirements to support force structure and equipment against existing inventory), Proponent: Headquarters, Department of the Army, Assistant Chief of Staff for Installation Management (DAIM-FDP), Washington, DC, Updated semi annually (Dec and June).

¹⁸ Headquarters, US Army Corps of Engineers Architectural Engineering Instructions, and Headquarters, Department of the Army, Assistant Chief of Staff for Installation Management, Plans and Operations Division (DAIM-FDP) Analysis of 1995 Facility Study of Redstone Arsenal.

¹⁹ Military Construction, Army Program submission, FY98/99 President's Budget.

²⁰ Army Budget, FY 98-99 and Headquarters Real Property Planning and Analysis System (HORPLANS), Data base of record for real property planning and analysis (calculates Army facility requirements to support force structure and equipment against existing inventory), Proponent: Headquarters, Department of the Army, Assistant Chief of Staff for Installation Management (DAIM-FDP), Washington, DC, Updated semi annually (Dec and June).

²¹ Logistics Management Institute, Facilities Directorate, Tysons Corner, VA.

²² Plant Replacement Value (PRV) used by the Army is the DOD approved methodology. Facility unit of measure (square foot, square yard, etc) multiplied by the approved Army Corps of Engineers cost factor for that category code, multiplied by the appropriate area cost factor, multiplied by the inflation rate for the projected year. New Construction is added at the estimated cost figure and demolition if known, is subtracted. Standard costs for Supervision, Inspection Overhead (SIOH) and contingency factors are also applied.

²³ Headquarters Integrated Facilities System (HQIFS), Data base of record for the Army's world wide real property inventory, Proponent: Headquarters Department of the Army, Assistant Chief of Staff for Installation Management (DAIM-FDP), Washington, DC, updated semi annually (Dec and June).

²⁴ Installation Status Report (ISR), Data base of record for status of Army facility conditions, Proponent: Headquarters, Department of the Army, Assistant Chief of Staff for Installation Management (DAIM-FDP), Washington, DC, Updated semi annually (Dec and June).

²⁵ In researching the alternative to ownership, it was noted that facility leasing is not totally centrally managed. Almost any MACOM or installation that has sufficient funds to devote to leasing can do so for leases below \$1M annually or 1M acres without HQDA approval. Thus, the HQDA (OACSIM) record keeping for Army facilities leasing may not be as comprehensive as for Army owned property, however, efforts are being made to consolidate all leasing data. Figures shown in the text are the best available as of the date of this research.

²⁶ Headquarters US Army Corps of Engineers, Real Estate Division records.

²⁷ Headquarters Real Property Planning and Analysis System (HQRPLANS), Data base of record for real property planning and analysis (calculates Army facility requirements to support force structure and equipment against existing inventory), Proponent: Headquarters, Department of the Army, Assistant Chief of Staff for Installation Management (DAIM-FDP), Washington, DC, Updated semi annually (Dec and June)...In various sections of the Army Staff, the total number of installations remaining is presented in many different formats. The format presented in this paper is based on an installation's predominate use. In the format presented, Hunter AAF is a separate base but combined with Ft Stewart for purposes of this list. Yakima Firing Center and Vancouver Barracks are separate posts but included with Ft Lewis. Not included are Pueblo and Umatilla due to their unique chemical demilitarization status.

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